

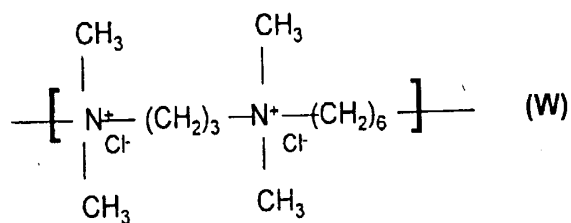
WHAT IS CLAIMED IS:

1. A composition for the oxidation dyeing of keratin fibers comprising, in a medium suitable for dyeing:
 - a) at least one oxidation dye,
 - b) at least one associative polymer,
 - c) at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain, and
 - d) at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain.
2. The composition according to Claim 1, wherein the keratin fibers are human keratin fibers.
3. The composition according to Claim 1, wherein the keratin fibers are hair.
4. The composition according to Claim 1, wherein the at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain is chosen from unsubstituted celluloses and cellulose ethers.
5. The composition according to Claim 4, wherein the at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain is chosen from (C₁-C₄)alkylcelluloses; hydroxy(C₁-C₄)alkylcelluloses; hydroxyethylcelluloses; hydroxypropylcelluloses; and mixed hydroxy(C₁-C₄)alkyl(C₁-C₄)alkylcelluloses.
6. The composition according to Claim 1, wherein the at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain is present in the composition in an amount ranging from 0.1% to 10% by weight relative to the total weight of the composition.

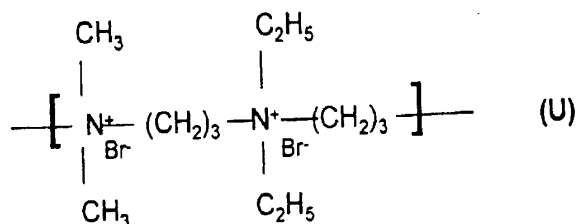
7. The composition according to Claim 1, wherein the at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain is present in the composition in an amount ranging from 1% to 5% by weight relative to the total weight of the composition.

8. The composition according to Claim 1, wherein the at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain is dimethyldiallylammonium chloride homopolymer.

9. The composition according to Claim 1, wherein the at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain is a polymer containing repeating units corresponding to formula (W) below:



10. The composition according to Claim 1, wherein the at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain is a polymer containing repeating units corresponding to formula (U) below:



11. The composition according to Claim 1, wherein the at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty

chain is present in the composition in an amount ranging from 0.1% to 10% by weight relative to the total weight of the composition.

12. The composition according to Claim 11, wherein the at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain is present in the composition in an amount ranging from 1% to 5% by weight relative to the total weight of the composition.

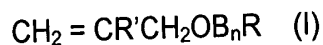
13. The composition according to Claim 1, wherein the at least one associative polymer is chosen from nonionic, anionic, cationic, and amphoteric associative polymers.

14. The composition according to Claim 13, wherein the at least one associative polymer is a nonionic associative polymer comprising at least one hydrophilic unit and at least one fatty-chain allyl ether unit.

15. The composition according to Claim 14, wherein the at least one hydrophilic unit is an ethylenic unsaturated anionic monomer.

16. The composition according to Claim 15, wherein the ethylenic unsaturated anionic monomer is a vinylcarboxylic acid.

17. The composition according to Claim 14, wherein the at least one fatty-chain allyl ether unit is a monomer of formula (I) below



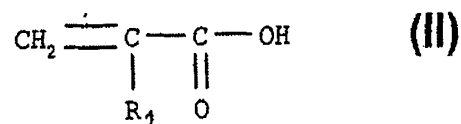
wherein R' is chosen from H and CH₃, B is an ethyleneoxy radical, n is chosen from zero and an integer ranging from 1 to 100, R is a hydrocarbon-based radical chosen from alkyl, arylalkyl, aryl, alkylaryl, and cycloalkyl radicals, comprising from 8 to 30 carbon atoms.

18. The composition according to Claim 17, wherein R is a hydrocarbon-based radical chosen from alkyl, arylalkyl, aryl, alkylaryl, and cycloalkyl radicals, comprising from 10 to 24 carbon atoms.

19. The composition according to Claim 18, wherein R is a hydrocarbon-based radical chosen from alkyl, arylalkyl, aryl, alkylaryl, and cycloalkyl radicals, comprising from 12 to 18 carbon atoms.

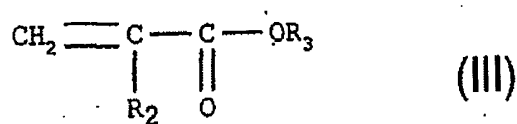
20. The composition according to Claim 1, wherein the at least one associative polymer is a fatty-chain anionic associative polymer comprising at least one hydrophilic unit of unsaturated olefinic carboxylic acid and at least one hydrophobic unit of (C₁₀-C₃₀)alkyl ester of unsaturated carboxylic acid.

21. The composition according to Claim 20, wherein the at least one hydrophilic unit of unsaturated olefinic carboxylic acid is a monomer of formula (II) below:



wherein R₁ is chosen from H, CH₃, and C₂H₅, and

wherein the at least one hydrophobic unit of (C₁₀-C₃₀)alkyl ester of unsaturated carboxylic acid is a monomer of formula (III) below:



wherein R₂ is chosen from H, CH₃, and C₂H₅, R₃ is a C₁₀-C₃₀ alkyl radical.

22. The composition according to Claim 21, wherein in formula (III) R₃ is a C₁₂-C₂₂ alkyl radical.

23. The composition according to Claim 14, wherein the at least one associative polymer is a maleic anhydride/C₃₀-C₃₈ α-olefin/alkyl maleate terpolymer.

24. The composition according to Claim 14, wherein the at least one associative polymer is an acrylic terpolymer comprising:

(a) about 20% to 70% by weight of a carboxylic acid containing α,β -monoethylenic unsaturation,

(b) about 20% to 80% by weight of a non-surfactant monomer containing α,β -monoethylenic unsaturation other than (a), and

(c) about 0.5% to 60% by weight of a nonionic monourethane which is the product of the reaction of a monohydric surfactant with a monoisocyanate containing monoethylenic unsaturation.

25. The composition according to Claim 14, wherein the at least one associative polymer is chosen from copolymers comprising among their monomers a carboxylic acid containing α,β -monoethylenic unsaturation and an ester of a carboxylic acid containing α,β -monoethylenic unsaturation, and of an oxyalkylenated fatty alcohol.

26. The composition according to Claim 14, wherein the at least one associative polymer is chosen from:

- (1) celluloses modified with groups comprising at least one fatty chain;
- (2) hydroxypropyl guar modified with groups comprising at least one fatty chain;
- (3) polyurethane polyethers comprising in their chain both hydrophilic blocks of polyoxyethylenated nature and hydrophobic blocks which are aliphatic sequences alone and/or cycloaliphatic and/or aromatic sequences;
- (4) copolymers of vinylpyrrolidone and of fatty-chain hydrophobic monomers;
- (5) copolymers of C_1 - C_6 alkyl methacrylates or acrylates and of amphiphilic monomers comprising at least one fatty chain;
- (6) copolymers of hydrophilic methacrylates or acrylates and of hydrophobic monomers comprising at least one fatty chain; and
- (7) polymers with an aminoplast ether skeleton containing at least one fatty chain.

27. The composition according to Claim 26, wherein the polyurethane polyethers comprise at least two hydrocarbon-based lipophilic chains comprising from 8 to 30 carbon atoms, separated by a hydrophilic block, the at least two hydrocarbon-based lipophilic chains being pendent chains or chains at the end of a hydrophilic block.

28. The composition according to Claim 26, wherein the polyurethane polyether is in multiblock form.

29. The composition according to Claim 28, wherein the polyurethane polyether is in triblock form

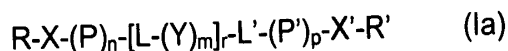
30. The composition according to Claim 13, wherein the at least one associative polymer is a cationic polymer chosen from:

- (i) quaternized celluloses modified with groups comprising at least one fatty chain,
- (ii) quaternized hydroxyethylcelluloses modified with groups comprising at least one fatty chain,
- (iii) cationic polyvinyl lactams,
- (iv) cationic polyurethanes, and
- (v) acrylic terpolymers comprising acrylates, amino(meth)acrylates and itaconate of a C₁₀-C₃₀ alkyl, polyoxyethylenated with 20 mol of ethylene oxide.

31. The composition according to Claim 30, wherein the at least one fatty chain of the quaternized celluloses or hydroxyethylcelluloses contains from 8 to 30 carbon atoms.

32. The composition according to Claim 30, wherein the quaternized hydroxyethylcellulose is modified with a C₁₂ or C₁₈ alkyl group resulting in a cationic amphiphilic polymer.

33. The composition according to Claim 30, wherein the cationic polyurethane is a polymer of formula (Ia) below:



wherein:

R and R', which may be identical or different, are chosen from a hydrophobic group and a hydrogen atom;

X and X', which may be identical or different, are chosen from a group comprising an amine function optionally bearing a hydrophobic group, and alternatively a group L";

L, L' and L", which may be identical or different, are each a group derived from a diisocyanate;

P and P', which may be identical or different, are each a group comprising an amine function optionally bearing a hydrophobic group;

Y is a hydrophilic group;

r is an integer ranging from 1 to 100; and

n, m and p each range, independently of each other, from 0 to 1000;

wherein the molecule containing at least one protonated or quaternized amine function and at least one hydrophobic group.

34. The composition according to Claim 33, wherein r is an integer ranging from 1 to 50.

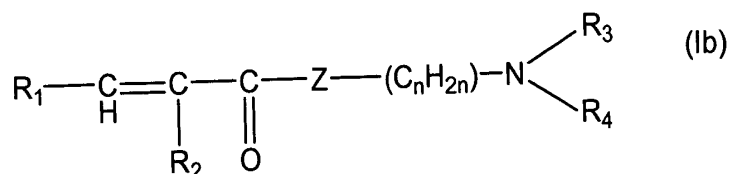
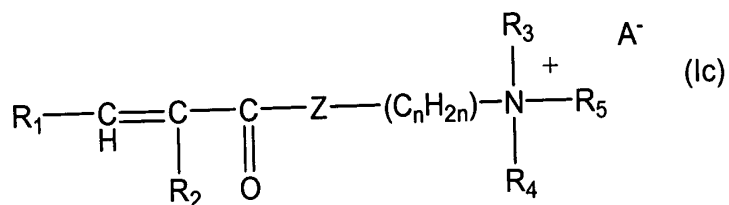
35. The composition according to Claim 34, wherein r is an integer ranging from 1 to 25.

36. The composition according to Claim 13, wherein the amphoteric polymer comprises at least one fatty chain comprising from 8 to 30 carbon atoms and at least one non-cyclic cationic unit.

37. The composition according to Claim 36, wherein the amphoteric polymer comprises from 1 mol% to 20 mol% of monomer comprising a fatty chain, relative to the total number of moles of monomers.

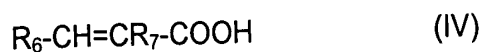
38. The composition according to Claim 36, wherein the amphoteric polymer comprises:

1) at least one monomer of formula (Ic) or (Ib):



wherein R₁ and R₂, which may be identical or different, are chosen from a hydrogen atom and a methyl radical, R₃, R₄ and R₅, which may be identical or different, are chosen from linear and branched alkyl radicals comprising from 1 to 30 carbon atoms, Z is chosen from an NH group and an oxygen atom, n is an integer from 2 to 5, and A⁻ is an anion derived from an organic or mineral acid;

2) at least one monomer of formula (IV)



wherein R₆ and R₇, which may be identical or different, are chosen from a hydrogen atom and a methyl radical;

and

3) at least one monomer of formula (V):



wherein R_6 and R_7 , which may be identical or different, are chosen from a hydrogen atom and a methyl radical, X is chosen from an oxygen atom and a nitrogen atom, and R_8 is a linear or branched alkyl radical comprising from 1 to 30 carbon atoms;

at least one of the monomers of formula (Ic), (Ib) or (V) comprises at least one fatty chain.

39. The composition according to Claim 38, wherein the monomer of formulae (Ic) and (Ib) is chosen from dimethylaminoethyl methacrylate, dimethylaminoethyl acrylate, diethylaminoethyl methacrylate, diethylaminoethyl acrylate, dimethylaminopropyl methacrylate, dimethylaminopropyl acrylate, dimethylaminopropylmethacrylamide, and dimethylaminopropylacrylamide, which are optionally quaternized.

40. The composition according to Claim 38, wherein the monomer of formula (Ic) is chosen from acrylamidopropyltrimethylammonium chloride, and methacrylamidopropyltrimethylammonium chloride.

41. The composition according to Claim 38, wherein the monomer of formula (IV) is chosen from acrylic acid, methacrylic acid, crotonic acid, and 2-methylcrotonic acid.

42. The composition according to Claim 38, wherein the monomer of formula (V) is chosen from C_{12} - C_{22} alkyl acrylates and methacrylates.

43. The composition according to Claim 42, wherein the monomer of formula (V) is chosen from C_{16} - C_{18} alkyl acrylates and methacrylates.

44. The composition according to Claim 1, wherein the at least one associative polymer is present in the composition an amount ranging from 0.05% to 10% by weight relative to the total weight of the composition.

45. The composition according to Claim 44, wherein the at least one associative polymer is present in the composition an amount ranging from 0.1% to 5% by weight relative to the total weight of the composition.

46. The composition according to Claim 1, wherein the at least one associative polymer is a cationic polymer.

47. The composition according to Claim 46, wherein the cationic polymer is chosen from cationic polyurethanes.

48. The composition according to Claim 1, wherein the weight ratio of the at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain to the at least one associative polymer ranges from 0.1 to 10.

49. The composition according to Claim 48, wherein the weight ratio of the at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain to the at least one associative polymer ranges from 0.5 to 5.

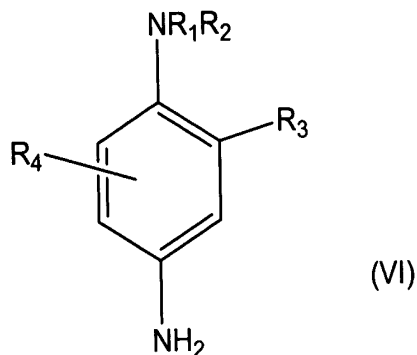
50. The composition according to Claim 1, wherein the at least one oxidation dye is chosen from oxidation bases and couplers.

51. The composition according to Claim 50, wherein the at least one oxidation dye comprises at least one oxidation base.

52. The composition according to Claim 51, wherein the at least one oxidation base is chosen from ortho- and para-phenylenediamines, double bases, ortho- and para-aminophenols, heterocyclic bases, and the acid addition salts of these compounds.

53. The composition according to Claim 52, wherein the para-phenylenediamines

are chosen from compounds of structure (VI) below:



wherein:

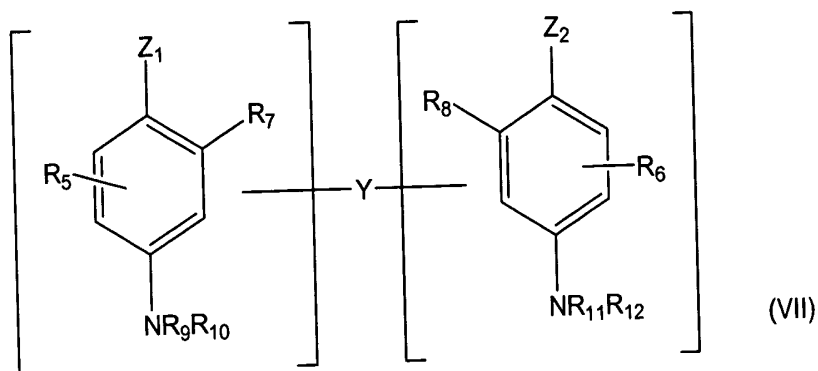
- R₁ is chosen from a hydrogen atom, a C₁-C₄ alkyl radical, a C₁-C₄ monohydroxyalkyl radical, a C₂-C₄ polyhydroxyalkyl radical, a (C₁-C₄)alkoxy(C₁-C₄)alkyl radical, and a C₁-C₄ alkyl radical substituted with a nitrogenous, phenyl or 4'-aminophenyl group;
- R₂ is chosen from a hydrogen atom, a C₁-C₄ alkyl radical, a C₁-C₄ monohydroxyalkyl radical, a C₂-C₄ polyhydroxyalkyl radical, a (C₁-C₄)alkoxy(C₁-C₄)alkyl radical, and a C₁-C₄ alkyl radical substituted with a nitrogenous group;

R₁ and R₂ may also form, with the nitrogen atom that bears them, a 5- or 6-membered nitrogenous heterocycle optionally substituted with at least one alkyl, hydroxyl, or ureido groups;

- R₃ is chosen from a hydrogen atom, a halogen atom, a C₁-C₄ alkyl radical, a sulphonyl radical, a carboxy radical, a C₁-C₄ monohydroxyalkyl radical, a C₁-C₄ hydroxyalkoxy radical, an acetylamino(C₁-C₄)alkoxy radical, a mesylamino(C₁-C₄)alkoxy radical, and a carbamoylamino(C₁-C₄)alkoxy radical, and
- R₄ is chosen from a hydrogen atom, a halogen atom, and a C₁-C₄ alkyl radical.

54. The composition according to Claim 53, wherein that halogen atom of R_3 is a chlorine atom.

55. The composition according to Claim 52, wherein the double bases are chosen from the compounds of structure (VII) below:

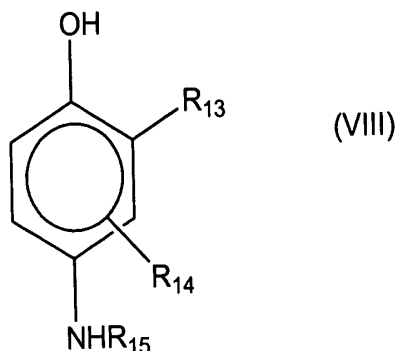


wherein:

- Z_1 and Z_2 , which may be identical or different, are chosen from a hydroxyl radical, and a - NH_2 radical which may be substituted with a C_1 - C_4 alkyl radical or with a linker arm Y;
- the linker arm Y is a linear or branched alkylene chain containing from 1 to 14 carbon atoms, which may be interrupted by or terminated with at least one nitrogenous groups and/or at least one hetero atoms, and optionally substituted with at least one hydroxyl or C_1 - C_6 alkoxy radicals;
- R_5 and R_6 , which may be identical or different, are chosen from a hydrogen atom, a halogen atom, a C_1 - C_4 alkyl radical, a C_1 - C_4 monohydroxyalkyl radical, a C_2 - C_4 polyhydroxyalkyl radical, a C_1 - C_4 aminoalkyl radical, and a linker arm Y; and
- R_7 , R_8 , R_9 , R_{10} , R_{11} and R_{12} , which may be identical or different, are chosen from a hydrogen atom, a linker arm Y, and a C_1 - C_4 alkyl radical;

wherein the compounds of formula (VII) contain only one linker arm Y per molecule.

56. The composition according to Claim 52, wherein the para-aminophenols are chosen from compounds of formula (VIII) below:



wherein:

R_{13} is chosen from a hydrogen atom, a halogen atom, a C_1 - C_4 alkyl, C_1 - C_4 monohydroxyalkyl, $(C_1$ - C_4)alkoxy(C_1 - C_4)alkyl, C_1 - C_4 aminoalkyl, and hydroxy(C_1 - C_4)alkylamino(C_1 - C_4)alkyl radical,

R_{14} is chosen from a hydrogen atom, a halogen atom, a C_1 - C_4 alkyl, C_1 - C_4 monohydroxyalkyl, C_2 - C_4 polyhydroxyalkyl, C_1 - C_4 aminoalkyl, C_1 - C_4 cyanoalkyl, and $(C_1$ - C_4)alkoxy(C_1 - C_4)alkyl radical, and

R_{15} is chosen from a hydrogen atom and a C_1 - C_4 alkyl radical.

57. The composition according to Claim 56, wherein the halogen atom in at least one of R_{13} or R_{14} is fluorine,

58. The composition according to Claim 52, wherein the heterocyclic bases are chosen from pyridine derivatives, pyrimidine derivatives, and pyrazole derivatives.

59. The composition according to Claim 51, wherein the at least one oxidation base is present in the composition in an amount ranging from 0.0005% to 12% by weight relative to the total weight of the composition.

60. The composition according to Claim 59, wherein the at least one oxidation base is present in the composition in an amount ranging from 0.005% to 8% by weight relative to the total weight of the composition.

61. The composition according to Claim 50, wherein the at least one oxidation dye is at least one coupler chosen from meta-phenylenediamines, meta-aminophenols, meta-diphenols, heterocyclic couplers, and the acid addition salts thereof.

62. The composition according to Claim 50, wherein the at least one coupler is present in the composition in an amount ranging from 0.0001% to 10% by weight relative to the total weight of the composition.

63. The composition according to Claim 62, wherein the at least one coupler is present in the composition in an amount ranging from 0.005% to 5% by weight relative to the total weight of the composition.

64. The composition according to Claim 52, wherein the acid addition salts of the at least one oxidation base are chosen from hydrochlorides, hydrobromides, sulphates, tartrates, lactates, and acetates.

65. The composition according to Claim 52, wherein the acid addition salts of the at least one coupler are chosen from hydrochlorides, hydrobromides, sulphates, tartrates, lactates, and acetates.

66. The composition according to Claim 1, further comprising at least one direct dye.

67. The composition according to Claim 1, further comprising at least one amphoteric substantive polymer other than the at least one amphoteric associative polymer.

68. The composition according to Claim 67, wherein the at least one amphoteric substantive polymer is present in the composition in an amount ranging from 0.01% to 10% by weight relative to the total weight of the composition.

69. The composition according to Claim 67, wherein the at least one amphoteric substantive polymer is present in the composition in an amount ranging from 0.05% to 5% by weight relative to the total weight of the composition.

70. The composition according to Claim 67, wherein the at least one amphoteric substantive polymer is present in the composition in an amount ranging from 0.1% to 3% by weight relative to the total weight of the composition.

71. The composition according to Claim 1, further comprising at least one surfactant chosen from anionic, amphoteric, nonionic, zwitterionic, and cationic surfactants.

72. The composition according to Claim 71, wherein the at least one surfactant is nonionic.

73. The composition according to Claim 71, wherein the at least one surfactant is present in the composition in an amount ranging from 0.01% to 40% by weight relative to the total weight of the composition.

74. The composition according to Claim 73, wherein the at least one surfactant is present in the composition in an amount ranging from 0.5% to 30% by weight relative to the total weight of the composition.

75. The composition according to Claim 1, further comprising at least one additional thickener.

76. The composition according to Claim 75, wherein the at least one additional thickener is chosen from a cellulose-based thickener, a guar gum derivative, a gum of microbial origin, and a synthetic thickener.

77. The composition according to Claim 75, wherein the at least one additional thickener is present in the composition in an amount ranging from 0.01% to 10% by weight relative to the total weight of the composition.

78. The composition according to Claim 1, further comprising at least one reducing agent which is present in the composition in an amount ranging from 0.05% to 1.5% by weight relative to the total weight of the composition.

79. A ready-to-use composition comprising, in a medium suitable for dyeing:

- a) at least one oxidation dye,
- b) at least one associative polymer,
- c) at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain,
- d) at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain, and
- e) at least one oxidizing agent.

80. The composition according to Claim 79, wherein the at least one oxidizing agent is chosen from hydrogen peroxide, urea peroxide, alkali metal bromates, ferricyanides, persalts, and redox enzymes, optionally with the respective donor or cofactor thereof.

81. The composition according to Claim 80, wherein the at least one oxidizing agent is hydrogen peroxide.

82. The composition according to Claim 81, wherein the at least one oxidizing agent is an aqueous hydrogen peroxide solution whose titre ranges from 1 to 40 volumes.

83. The composition according to Claim 82, wherein the composition has a pH ranging from 4 to 11.

84. A process for the oxidation dyeing of keratin fibers comprising:

- (i) applying to the keratin fibers at least one composition (A) comprising, in a medium suitable for dyeing,
 - a) at least one oxidation dye,
 - b) at least one associative polymer,
 - c) at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain, and
 - d) at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain;
- (ii) applying to the keratin fibers at least one composition (B) comprising at least one oxidizing agent.

85. The process according to Claim 84, wherein the keratin fibers are hair.

86. The process according to Claim 84, comprising mixing, at the time of use, the at least one composition (A) and the at least one composition (B).

87. The process according to Claim 84, wherein the at least one composition (B) is applied sequentially before or after the at least one composition (A), with or without intermediate rinsing.

88. The process according to Claim 84, wherein the color of the fibers is developed at an alkaline, neutral or acidic pH.

89. A multicompartiment kit comprising: /

- (i) a first compartment comprising at least one composition (A) comprising, in a medium suitable for dyeing,
 - a) at least one oxidation dye,
 - b) at least one associative polymer,

- c) at least one nonionic cellulose-based compound not comprising a C₈-C₃₀ fatty chain, and
 - d) at least one cationic polymer with a charge density of greater than 1 meq/g and not comprising a C₈-C₃₀ fatty chain;
- (ii) a second compartment comprising at least one composition (B) comprising at least one oxidizing agent.